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PIEZOELECTRIC ELEMENT AND METHOD  
OF PRODUCING THE SAME

2/28/05  
This application claims priority of United States Patent Application Serial  
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now U.S. PAT. 6,424,080

5 BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a piezoelectric resonator, and more particularly, to a piezoelectric element for use as an oscillator in a communication filter and a clock generator.

10 2. Description of the Related Art

As one of conventional piezoelectric elements, known is a piezoelectric element produced by polarizing a piezoelectric ceramic body having a layered perovskite structure perpendicular to the orientation axis of the piezoelectric ceramic body. In such a piezoelectric element, electrodes are formed on both of the end faces  
15 of the piezoelectric ceramic body. Piezoelectric vibration can be excited by applying an electric field in the polarization direction.

Moreover, the inventors of the present invention have proposed a piezoelectric element of such a type that interdigital electrodes are formed on the front and back main faces of a single plate piezoelectric ceramic body for excitation.  
20 This piezoelectric element does not use a lamination process with a large number of steps. Accordingly, the piezoelectric element can be utilized conveniently, industrially, and has a high reliability with no problem on the optimization of coupling of an electrode interface to a ceramic.